AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently Amended) A computerized system for determining location by tracking ~~and locating~~ a source of ionizing radiation, the system comprising:

[[(a)]] ~~at least one non-imaging sensor module comprising~~ at least one first radiation detector capable of receiving ionizing radiation from the radiation source and for producing first output signals; [[and]]

at least one second radiation detector[[,]] ~~said at least one first radiation detector and at least one second radiation detector~~ capable of receiving ionizing radiation from the radiation source and producing second output signals; and

[[(b)]] ~~said CPU designed and~~ at least one processor configured to receive ~~said output signals~~ and use said first and second output signals ~~to use a comparison of the output signals from the at least one first radiation detector and the at least one second radiation detector~~ to determine a plane in which the source resides, wherein the at least one processor is further configured to determine the plane when the source has an activity in the range of about 0.01mCi to about 0.5mCi.

2. (Currently Amended) The system of claim 1, wherein the at least one first radiation detector and the at one least second radiation detector ~~source of radiation is integrally formed with or attached to~~ are oriented to enable detection of the source when the source is connected to a medical device.

3. (Currently Amended) The system of claim 1, wherein ~~said at least one sensor module includes at least two sensor modules~~ each of the at least one first detector and the at least one second detector are part of at least one sensor module.

4. (Currently Amended) The system of claim 3, wherein said at least [[two]] one sensor module[[s]] includes at least three sensor modules.

5. (Currently Amended) The system of claim 1, ~~wherein at least one of said at least one sensor module further comprises~~ further comprising at least one [[a]] locomotion device[[,]] ~~said locomotion device capable of~~ configured to impart[[ing]] translational motion to said at least one sensor module ~~so that said sensor module is moved to a new location~~ in response to an instruction generated by the at least one processor.

6. (Currently Amended) The system of claim [[5]]4, ~~wherein said~~ further comprising at least three locomotion devices ~~is operable by a translational motion signal from said CPU~~ each associated with one of the at least three sensor modules, said at least three locomotion devices configured to impart translational motion to an associated sensor module in response to instructions from the at least one processor.

7. (Currently Amended) The system of claim 1, additionally comprising:

[[(c)]] an imaging module, said imaging module ~~capable of~~ being configured to provide[[ing]] an image signal to said ~~CPU, said CPUcapable of translating~~ ~~said~~ at least one processor wherein said at least one processor is configured to translate the image signal into an image of a portion of [[the]] a body of [[the]] a subject.

8. (Withdrawn) The system of claim 1, further comprising a display device.

9. (Currently Amended) The system of claim 7, further comprising a display device configured to display the body portion image.

10. (Currently Amended) The system of claim 9, wherein the source of radiation is connected ~~integrally formed with or attached~~ to a medical device, and wherein said display device is ~~capable of~~ configured to display[[ing]] ~~said~~ the image of said portion of the body ~~of the subject~~ with a determined position of the medical device superimposed on said image of said portion of the body ~~of the subject~~.

11. (Currently Amended) The system of claim 3, wherein said [[CPU]] at least one processor receives at least two output signals each defining a plane in which said radiation source resides, and computes a linear intersection of the two planes[[,]] upon which said radiation source is located.

12. (Currently Amended) The system of claim [[4]] 3, wherein said [[CPU]] at least one sensor module includes three sensor modules, and wherein the at least one processor is configured to receive[[s]] at least three output signals each defining a plane in which said radiation source resides, and to compute[[s]] a position of said radiation source by determining an intersection of [[the]] three planes.

13. (Currently Amended) The system of claim 12, wherein said [[CPU]] at least one processor is configured to compute said position repeatedly at predetermined intervals so that a position of said radiation source as a function of time may be plotted.

14. (Original) The system of claim 1, wherein said radiation source employs an isotope with a half life in the range of 6 to 18 months.

15. (Original) The system of claim 1, additionally comprising said radiation source capable of providing said radiation.

16. (Withdrawn) The system of claim 1, wherein said plane is determined when the source has an activity in the range of 0.01mCi to 0.5mCi.

17. (Withdrawn) A sensor for directionally locating an ionizing radiation source, the sensor comprising:

(a) at least one functional component; and

(b) a displacement mechanism which imparts angular sensitivity to the sensor by moving said at least one functional component.

18. (Withdrawn) A sensor according to claim 17, wherein said at least one functional component comprising at least one radiation detector, said at least one radiation detector capable of receiving radiation from the radiation source and producing an output signal;

wherein said displacement mechanism is capable of rotating said at least one radiation detector through a rotation angle so that said output signal varies with said rotation angle.

19. (Withdrawn) The sensor of claim 18, wherein said at least one radiation detector comprises at least one first radiation detector and at least one second radiation detector and said output signal comprises at least one first output signal from said at

least one first radiation detector and at least one second output signal from said at least one second radiation detector.

20. (Withdrawn) The sensor of claim 19, additionally comprising at least one radiation shield installed at a fixed angle with respect to said at least one first radiation detector and said at least one second radiation detector so that a magnitude of said first output signal from said at least one first radiation detector and a magnitude of said second output signal from said radiation detector vary with said rotation angle.

21. (Withdrawn) A sensor according to claim 17, comprising:

(a) at least one first radiation detector and at least one second radiation detector, each of said at least one first radiation detector and at least one second radiation detector capable of receiving radiation from the radiation source and producing at least one first output signal from said at least one first radiation detector and at least one second output signal from said at least one second radiation detector; and

(b) at least one radiation shield, said radiation shield rotatable about an axis of shield rotation through an angle of shield rotation, so that a magnitude of said first output signal from said at least one first radiation detector and a magnitude of said second output signal from said second radiation detector each vary with said angle of shield rotation.

22. (Withdrawn) A sensor according to claim 20, wherein said at least one radiation shield comprises

(i) a primary radiation shield located between said at least one first radiation detector and said at least one second radiation detector;

(ii) at least one first additional radiation shield deployed to interfere with incident radiation directed towards said at least one first radiation detector; and

(iii) at least one second additional radiation shield deployed to interfere with incident radiation directed towards said at least one second radiation detector.

23. (Withdrawn) The sensor according to claim 22, wherein said at least one first additional radiation shield and said at least one second additional radiation shield are each inclined towards said primary radiation shield.

24. (Withdrawn) A sensor according to claim 22, wherein said at least one first radiation detector and said at least one second radiation detector are organized in pairs, each pair having a first member and a second member and each radiation shield of said primary and additional radiation shields is located between one of said first member and one of said second member of one of said pairs so that said output signal varies with said rotation angle.

25. (Withdrawn) The sensor of claim 17, additionally capable of revolving said at least a functional component about an axis of revolution through an angle of revolution.

26. (Currently Amended) A method of determining a location of a radiation source, the method comprising:

[[(a)]] providing an ionizing radiation source <u>having activity in the range of about 0.01mCi to about 0.5mCi</u>;

<u>detecting from the source radiation in said range;</u>

[[(b)]] determining based on said detected radiation a first plane in which said radiation source resides;

[[(c)]] ~~further~~ determining based on said detected radiation at least a second plane in which said radiation source resides;

[[(d)]] locat[[e]]ing said radiation source by calculating an intersection of said first plane and said at least a second plane.

27. (Currently Amended) The method of claim 26, wherein ~~said further~~ determining at least a second plane in which said radiation source resides includes determining at least a third plane in which said radiation source resides and ~~additionally comprising:~~ wherein the method further comprises:

[[(e)]] calculating a ~~point~~ location of intersection of said first plane, said second plane and said at least a third plane.

Claims 28-32. (Cancelled).

33. (Withdrawn) Use of an ionizing radiation source with an activity of 0.1mCi or less as a target for non imaging localization or tracking.

34. (Currently Amended) A system according to claim [[39]] 1, wherein the processor is configured to determine a plane with respect to [[directional information comprises directional information on]] a center of mass of the source.

Claims 35-36. (Cancelled).

37. (Currently Amended) A system according to claim 1, further comprising a displacement mechanism ~~which produces rotation~~ configured to cause motion of at

least one of the plurality of detectors, and wherein the at least one processor is configured to send signals to the displacement mechanism ~~a portion of the sensor module, or translational motion, or both, controlled by the CPU or the sensor module~~ in response to radiation received, to track the radiation source.

38. (Currently Amended) A system according to claim 37, wherein the displacement mechanism is configured to track[[s]] the radiation source by changing [[the]] location**s** of detection boundaries ~~of detection within which the source may be more accurately located by the system than outside the boundaries, to keep~~ in order to maintain the source within the detection boundaries ~~of detection~~.

39. (Withdrawn) A system according to claim 1, wherein using a comparison of the output signals to determine a plane in which the source resides comprises translating the output signals to directional information concerning the source, and expressing the directional information as a plane in which the source resides.

40. (Currently Amended) A system according to claim 4, wherein said at least three sensor modules includes at least four sensor modules, and ~~said CPU~~ wherein the at least one processor is configured to receive[[s]] at least four output signals each defining a plane in which said radiation source resides, and to solve[[s]] a resulting overdetermined set of equations to find a likely position of said radiation source, taking into account an error defined by a Euclidean distance between each plane and the position.

41. (New) The system of claim 1, further comprising at least one third radiation detector for producing third signals, and wherein the processor is configured to

determine the at least one plane using the first signals, the second signals, and the third signals.

42. (New) The system of claim 41, further comprising an at least one fourth radiation detector for producing fourth signals, and wherein the processor is further configured to determine the at least one plane using the first signals, the second signals, the third signals and the fourth signals.

43. (New) The system of claim 41, wherein the at least one plane is three planes.

44. (New) The system of claim 42, wherein the at least one plane is three planes.

45. (New) The system of claim 1, wherein the source includes a piece of radioactive metal implanted in a body of a subject.

46. (New) The system of claim 45, wherein the piece of radioactive metal is a wire.

47. (New) A system for determining a location associated with a source of ionizing radiation, the system comprising:

at least one radiation detector configured to receive ionizing radiation from the radiation source and to produce at least one output signal; and

a processor configured to receive said output signal and translate said output signal to directional information in response to activity from the source in the range of 0.01mCi to 0.5mCi.

48. (New) The system of claim 47, wherein the at least one radiation detector includes at least three radiation detectors, each configured to generate output signals, and wherein the at least one processor is further configured to use the output signals to identify a location within a body associated with the source.

49. (New) The system of claim 48, wherein the at least one processor is further configured to generate instructions for aiming a therapeutic beam at the location.

50. (New) The system of claim 48, wherein the location is an area of tissue located proximate the source.

51. (New) The system of claim 48, wherein the at least one processor is further configured to identify relative movement between the source and the at least one radiation detector and to adjust orientations of the at least one radiation detector in response to the identified relative movement.

52. (New) The system of claim 51, wherein the processor is configured to repeatedly re-aim the at least one radiation detector toward the source in response to repeated relative movement between the source and the at least one radiation detector.

53. (New) The system of claim 47, wherein the processor is configured to cooperate with the at least one radiation detector to identify a location associated with the source when the source is a radioactive piece of metal within a body of a subject.

54. (New) The system of claim 47, wherein the processor is configured to cooperate with the at least one radiation detector, to identify a location associated with

the source when the source is a radioactive piece of metal associated with a movable medical device having a portion for use within a body of a subject.

55. (New) The system of claim 47, wherein the at least one at least one radiation detector includes a plurality of radiation detectors, and wherein the system further includes a plurality of locomotion devices configured to receive signals from the at least one processor for re-aiming the plurality of radiation detectors toward the source when relative movement occurs between the source and the plurality of radiation detectors.

56. (New) The system of claim 47, wherein the processor is configured to identify, within a body of a subject, a location associated with the source, and wherein the at least one processor is further configured to receive information for constructing an image of the location, wherein the at least one process is further configured to output signals for displaying a location indicator superimposed on the image.

57. (New) The system of claim 47, wherein the at least one radiation detector includes a plurality of radiation detectors configured to generate a plurality of signals, and wherein the at least one processor is configured to use the plurality of signals to identify a three dimensional location associated with the sensor.

58. (New) The system of claim 57, wherein the processor identifies the three dimensional location by calculating an intersection of at least three planes.

59. (New) The system of claim 57, wherein the processor is configured to receive information indicative of relative movement between the source and the plurality

of radiation detectors, and to generate instructions for adjusting positions of the plurality of radiation detectors in response to the relative movement.

60. (New) A system for determining a location by tracking a source of ionizing radiation, the system comprising:

at least one radiation detector being configured to receive ionizing radiation from a source having a half life of between 6 and 18 months and to produce an output signal; and

a processor configured to receive said output signal and to translate said output signal to directional information in response to activity from the source.